

FIELD SAMPLING EVENT TRIP REPORT

AT

NEW RIVER STORAGE DEPOT, VIRGINIA

JUNE 3-5, 1997

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION III**

Prepared by

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with the assistance of**

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FIELD SAMPLING EVENT TRIP REPORT
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NEW RIVER STORAGE DEPOT
PULASKI COUNTY, VIRGINIA

Introduction

Gannett Fleming, Inc., has been tasked with conducting independent field sampling at the New River Storage Depot (NRSD). A field sampling event was conducted by Gannett Fleming subcontractor A.T. Kearney (ATK) on June 3-5, 1997. The purpose of the sampling event was to collect and analyze environmental samples, from six (6) areas at the NRSD site which were identified during the March 24-26, 1997, site reconnaissance visit, and detailed in the Task Work Plan For Field Sampling dated May 5, 1997, in order to generate the chemical analysis data necessary for the Army to move forward with prioritization of the facility for installation restoration. Samples collected consisted of shallow soils, surface and spring water, sediments, sludges and waste materials on property currently owned by NRSD. The participants in this activity were: Mike McGeehan, Bret Kendrick and Robert Gurdikian (ATK subcontractor team) and Arne Olsen (Alliant TechSystems).

A field logbook was maintained during the field activities to record all observed activities. The logbook documented sampling locations and designations, descriptions of sampling matrixes, and a summary of field techniques employed. The logbook also documented the date, time and subject matter of photographs taken during the sampling event. A summary of the activities conducted during the three-day sampling event were as follows.

Attachment A contains a copy of the field logbook which was maintained during the sampling event. Attachment B provides copies of the chain-of-custody forms. Attachment C and D provides a summary of the samplings locations and maps depicting those locations, respectively. Attachment E provides a photographic log documenting the sampling event.

Trip Activities - June 3, 1997

The 2-person sampling team (McGeehan/Gurdikian) arrived at the main gate of the Radford Army Ammunition Plant (RAAP) at approximately 0825 hours. The weather conditions on this day were drizzly, cloudy, little to no wind and a temperature of approximately 62°F. The team met with RAAP site coordinator, Mr. Arne Olsen of Alliant TechSystems. After a brief meeting, the team departed from RAAP to the NRSD.

Area A - North Burning Ground

The team proceeded to the Area A - North Burning Ground. Two shallow surface soil samples (NR-SS-01 and NR-SS-02) were collected from this location. The area was heavily vegetated. No signs of stressed vegetation was observed in this area. Sample NR-SS-01 was collected from a

location approximately 120 feet north of a deer stand located in Area A and approximately 43 feet north northwest from a cluster of tree pine trees located adjacent to area access road (Photograph 1-1). Sample NR-SS-02 was collected from a location approximately 45 feet north northeast from tree rubble laying adjacent to the area access road (Photograph 1-2). The samples were collected from a depth of approximately 6-8 inches. The soil in this area consisted of approximately 2-3 inches of a brown top soil above red clay layer. Sample volumes were collected at each sampling location for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

Area B - Igniter Area

The team proceeded to Area B - Igniter Area. The team inspected two manholes which were identified during the Site Reconnaissance Visit as potential sampling locations NR-SL-01 (Photographs 1-3 and 1-4) and NR-SL-02. NR-SL-01 was observed to be approximately 8.5 feet in depth and appeared to have two inlet and one outlet pipes. NR-SL-02 was observed to be approximately 45 feet in depth with 2 outlets. Mr. Olsen informed the team that RAAP/NRSD site procedures prohibited entry into confined spaces. The team determined that the manholes conformed to the definition of a confined space; therefore, no sample was collected from either of these locations.

A shallow surface soil sample (NR-SS-11) was collected from a location approximately five (5) feet east of building 5 (Photographs 1-5 through 1-7). This location was characterized by red stained soil extending several feet westward from the building 5's concrete foundation, which was also stained red. Samples were collected from a depth of approximately 5 inches. The sample consisted of red colored soil. A matrix spike/matrix spike duplicate (MS/MSD) sample was also collected from a location approximately one foot south of NR-SS-11 at a depth of 5 inches. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

The team proceeded to the western portion of the igniter building's loading dock for the collection of shallow soil sample NR-SS-03. This location consisted of an elevated concrete platform surrounded by surface soil and vegetation (Photograph 1-8). The loading dock's concrete floor and side walls were stained by an unknown red material. Sample NR-SS-03 was collected from the red-stained soil area on the southwest side of the loading dock. The sample consisted of fine sand and red clay. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

Area C - Burning Ground

Following collection of NR-SS-03, the team proceeded to Area C - Burning Ground. (The entire Area C actually consists of three subareas, Burning Ground, Wiggins Spring, and Prototype Building Area). The team proceeded to an elevated metal burning cage located approximately 100 feet south of the area's access road (Photographs 1-9 and 1-10). The area immediately surrounding the cage

was sparsely vegetated. A black residue/ash, which appeared to be ash from burned materials, was present on the cage's burning pan. The ash was also present on the soil located directly beneath the cage. A shallow surface soil sample (NR-SS-04) and a duplicate (NR-SS-04A) were collected from the southwestern corner of the burning cage. The soil was reddish to dark orange in color and contained pieces of the ash observed to be present in the burning cage. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, nitroglycerin, and dioxin/furan analyses.

Shallow soil sample NR-SS-05 was collected from an area located approximately 80 feet south of the burning cage (Photograph 1-11). The NR-SS-05 location consisted of a vegetated area with two piles of metal bands/stripping resting on the ground surface. The sample consisted of a sandy soil. There appeared to be iron oxide staining in the immediate vicinity of the soil sample location. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, nitroglycerin, and dioxin/furan analyses.

The team returned to the team van located on the access road in order to collect a rinsate sample (NR-RB-01) and a field blank (NR-FB-01).

The team then returned to the burning cage to collect a sample of the residue/ash material on the cage's burning pan (NR-WS-02). Upon closer inspection the material on the pan appeared to be comprised of unburned fiber bags, soil or sand and a dark ash material presumed to be burned fiber bags. Sample NR-WS-02 was collected from the southwest corner of the burning pan. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, nitroglycerin, and dioxin/furan analyses.

Following collection of NR-WS-02, the team departed the NRSD site at 1910 hours.

Trip Activities - June 4, 1997

The sampling team returned to the RAAP site at approximately 0815 hours to meet with Mr. Olsen. The team proceeded to NRSD and Area C - Wiggins Spring.

Area C - Wiggins Spring

Upon arrival at Area C - Wiggins Spring, the team collected analytical samples and took field measurements from two surface water samples (NR-SW-01 and NR-SW-02). The results of the field measurements were noted as follows:

<u>Measurement</u>	<u>NR-SW-01</u>	<u>NR-SW-02</u>
Temperature (°C)	12.4	12.6
pH	7.2	6.9
Conductivity (ls/cm)	470	557

Sample NR-SW-01 was collected from the spring's outlet location (Photographs 1-12 and 1-13). Sample NR-SW-02 was collected from a location in a small lake approximately 220 feet southeast of the spring outlet point (Photograph 1-14). Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

The team proceeded to collect lake sediment samples (NR-SD-01 and NR-SD-02). Sample NR-SD-01 was collected from a location approximately 5 feet west of the spring's outlet. The water at this location was approximately 1 foot in depth. Sample NR-SD-02 was collected from a location on the northeast side of the lake where the water was approximately 8 inches in depth. The sediment in this location was light brown in color.

Area C - Prototype Building Area

The team collected a sample (NR-SW-04) and a duplicate sample (NR-SW-04A) of liquid present in a sump pit (Photograph 1-18) located in the vicinity of the Prototype Building Area. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

The team collected a shallow soil sample (NR-SS-05) from an area located approximately 40 feet southeast from a sump (NR-SL-04 was subsequently pulled from this sump) and approximately 80 feet southwest of the remnants of prototype building (Photograph 1-17). The soil in this area consisted of a light-red clay. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

The team collected a sludge sample (NR-SL-04) from the bottom of a sump pit which was associated with the former Prototype Building (Photograph 1-19). The sludge was light-reddish brown in color and appeared to be comprised of dirt or clay materials. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

The team collected a shallow soil sample (NR-SS-06) from an area located east northeast of the remnants of the prototype building (Photographs 1-20 and 1-21). The soil in this area consisted of a light-red clay. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

It should be noted that two sample locations (NR-SL-03 and NR-SW-03) proposed to be collected from this area in the Task Work Plan for this event could not be located by Mr. Olsen during the site visit. As such, samples were not collected from this location.

Area D - Rail Yard

Two shallow soil samples, NR-SS-07 and NR-SS-08, were collected from Area D - Rail Yard. NR-SS-07 was collected from an area located approximately 100 feet northwest of the rail yard's loading docks at a depth of approximately 6 inches. The soil matrix from this location was sandy with a little clay material and was gray in color (Photograph 1-24). NR-SS-08 was collected from an area located approximately between the loading dock and the railroad tracks at a depth of approximately 6 inches (Photographs 1-22 and 1-25). The soil from this location was a combination of black sand and gravel to underlying red clay. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

A sludge sample (NR-SL-05) was also collected from a storm drain/manhole (Photograph 1-23) located in the Rail Yard area. This manhole was identified as No. 18 on facility maps. The manhole was approximately 3 feet in depth. The sludge collected from the manhole was orange in color and appeared to contain small amounts of brick material. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

Following collection of NR-SL-05, the team departed the NRSD site at 1705 hours.

Trip Activities - June 5, 1997

The sampling team returned to the RAAP site at approximately 0835 hours to meet with Mr. Olsen. Mr. Bret Kendrick of A.T. Kearney replaced Mr. McGeehan on the sampling team. The team proceeded to NRSD and Area E - Bag Loading Area. This area consists of two buildings, Buildings 405 and 406. The weather was partly cloudy, slightly breezy and approximately 65°F.

Area E - Bag Loading Area

Following inspection of the sumps present in this location it was determined that due to access and volume constraints that samples could not be readily collected from the sumps (Photographs 2-1 through 2-3). Therefore, samples NR-SL-06, NR-SL-07, NR-WW-01 and NR-WW-02 identified in the Task Work Plan were not collected.

The team collected field blank (NR-FB-02) at approximately 1105 hours.

Sample NR-WS-01 was collected from the floor of Building 405 (Photograph 2-4). The sampled material consisted of what was believed to be red "anti-sparking" floor material. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

The team proceeded to collect a shallow soil sample (NR-SS-09) from an area adjacent to Building 405 foundation (Photograph 2-5). The sample consisted of a rocky reddish soil. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

Area F - Igloo 1711

This area was characterized by what appeared to be a sink hole (Photograph 2-6 and 2-7). The area was well vegetated. Shallow soil sample NR-SS-10 was collected from a location at the bottom of the sink hole. The sample consisted of reddish brown soil. Sample volumes were collected for TCL volatiles, TCL BNA/Pesticides/PCB, TAL metals, cyanide, explosives, and nitroglycerin analyses.

Following the collection of NR-SS-10, the team departed the NRSD site and returned to RAAP where the team acquired additional deionized water and proceeded to collect an equipment blank sample (EB-02). The team departed the RAAP site at approximately 1440 hours.

Custody of samples NR-SS-04, NR-SS-04A, NR-SS-05 and NR-WS-02 was relinquished to Federal Express at 1700 hours for overnight delivery to Southwest Labs of Oklahoma (airbill number 4334154355).

Custody of the remaining samples collected during this field activity were relinquished to EPA Region III labs located in Annapolis, MD at 1330 hours on June 6, 1997.

ORIGINAL

ATTACHMENT A

FIELD LOGBOOK

At the burning ground, ATK is to
collect samples SS-01 and SS-02
as labeled in the May 5, 1997
Gannett + Fleming Sampling Workplan.

NR-SS01 - location 120 N
from Deer Stand

43 feet NNW
measured from middle of three
pines adjacent to road

Photo #1 - Pre sampling
of SS-01 location

10:30 Mike called Cynthia with
GK about using 40m VOA
for

10:45 SS-01 VOA collected PID=0
Soil color brown - 2-3 inches
turn to red clay composition
not muttly observed
11:00 collection of composition soils
from up to 5 1/2 inches
6 jars

2 VOAs and 6 composite samples
were collected at this location
NR-SS-01. No pid readings at this
location

At 1112, moved to SS-02.

SS-02 45 ft NNE
from tree Rubble along road.
Started Sample at 11:20 for VOA
PID = 0

Sample depth 5 inches
0-2 Brown Sand
2-3 Red Clay
Left SS-02 at 11:55

Photo # 2 Picture of SS-02
location of sample.

Photo # 3 - Photo of manhole - Sample
area SL-01. Manhole is approx.
20 ft deep. This manhole photo was
shot facing down. Photo at 1215.

Photo # 4 - Photo of inside manhole.

ORIGINAL

PID 1

This manhole is a contact spec will not be sampled by A.T. Kearney today. Shot facing down at 1216.

At 1235, Bob G. began decon of ~~sample and~~ (Mn) sampling equipment. Tap water, Alconox and DI water rinsed.

MM at SS-11 located between Bldg. 4 and 5 of former igniter building.

This location is located approximately five feet east of the Bldg # 5.

PID Reading = 0

Photograph # 5 was taken facing west of Bldg 5. This photo shows the location of the red soil in relation to the building. Taken at 1248

PID Reading = 0

Photograph # 6 was taken facing down of red soil area w/ vegetation. photo taken at 124

13:00 Decon complete - Actual depth of 13' MM - Mand 12 for Sewer Line H 2 is 8.5 feet

ORIGINAL

Sign on Building 5 wall

Bay 3 - location of SULPHATE
Printing on Left wall

Photograph 7 - sulphate photo with
bay # 3 facing south west. At 1340
photo taken.

At 1300, ^{VOA} sapling began at SS-11.
5 inch hole dug. Soil is very red.

At 1305, rest of saples were taken

At 1315, MS/MSD VOA saple taken

At 1320, MS/MSD rest of saples taken.

At this location, MS/MSD was dug
approximately one foot south of other hole.

At 1355, packed up this sapling location.

At 1410, left the facility to update individuals
and eat lunch.

At 1500, back at the facility. Moving on
to collect SL- 11 in manhole located
south of 19 meter building

- This manhole is located south of igniter building.
- The manhole is 45 feet deep and has 2 outlets.

It has been decided that this manhole is a confined space also and it will not be sampled. No manhole in Area B will be sampled during this event. All confined spaces.

At 1515, at SS-03 located western section of igniter building loading dock.

Photograph # 8 taken of SS-03 Facing NE of the building wall. Note red stains. Photo taken at 1519. Sample taken at dirt patch of loading dock.

It is believed to be loading dock because concrete or asphalt under soil.

VOA sampling began at 1530.
Other 6 bottles collected at 1540.

The soil collected here is very red
and clay-like. Most likely fine
sand and majority clay.

At 1600, left this area

At 1615, completed clean of
sampling equipment

At 1628, arrived at Area C -
Burning Ground / Cage (near Spring)
To collect WS-02, SS-04 and
SS-04.

Burn cage is constructed of metal
and fenced in. Presently still some
dark residue in cage. Burn Material.
Will collect dioxins here.

Soil beneath burn cage also has
some ash. Soil mainly dark orange
in color. Ash particles are black.

Photograph #9 - facing east
at 1700 of burn cage.

Photograph #10 - facing down at
1701 of waste ash material and
soil beneath the cage.

17:15 Vdo. sample at SS-04
Collected SS-04A Duplicate
Dip collected at same hole VOA all together
Composite Sample completed by 17:40
and collected in order Post-Exp ^{Organic} - Dioxin/Furans
Nitro / Explos
Metals.
~~VMA Sample WS-02~~
~~at 17:40 (MM) 6/3/97~~

B6 Sample SS-05 at 1740 ~~1740~~ (MM)
located \approx 80 ft south of the burning
cage for SS-04. Many roots found in soil
Sandy Soil. Iron-Oxide
Staining
(mottled)
(MM) ~~at 1745~~

At 1745, MM cleaned off
bottleware from SS-04 and placed
in cooler w/ ice. Mat collected
both SS-04 and SS-04A from Re

ORIGINAL

Same hole hole located beneath
the southwestern corner of the
Burn Cage. The soil was reddish
in color (dark orange) and had
bits of black ash in it.

At 1740, Bob took Photograph # 11
shot of SS-05 facing south.

MM prepared Rinstate and Field
Blank bottleware at 1745.

Rinstate sample took place on the
road located north of the Burn
Cage area (approx 100 ft). Rinstate
and Field Blank were collected
w/ reagent grade DI water from
Eagle-Pitcher labs.

Rinstate Sample took place at 1820.
Bob poured water over spoon ^{decanter}
for VOA samples and in a still
mixing bowl for other samples.
Samples labeled NR-RB-01.

Field Blaks were collected at 1840 using the same water. Water poured directly into sample jars. Samples labeled NR-FB-01.

At 1830, moved back to burn cage to collect WS-02. Burnt waste looks to be fiber bags. Some soil identified in burn cage. Also, very dark black ash (waste). MM pried open southwest corner of Burn Cage fence and began collection of WS-02 sample. VOAS first. Jars were filled w/ all types of waste (fiber bags, dark ash, soil, (red) orange

sample at WS-02 began at 1840. Dioxins + Furans collected here.

Dioxins and Furans were also collected at SS-04, SS-04A (dup.) and SS-05. 4 total samples of dioxin collected today.

At 1930, Bob continued down.

Packed up and left really for the day
at 1910.

ORIGINAL

June 4th, 1997

River

New Storage Depot. Arrived at
main facility to pick-up Mr. Olson
at 0815.

Arrived at New River Storage Depot
security gate at 0835. Got new
vehicle pass.

At 08

Started sample SW-01 at 1000 hrs
PH - 7.2
Cond 470 μ S/cm
Temp 12.4 °C

Photograph 12 + 13 - Location of Pump Station
Pad.
taken at 09:45 hrs
to the south of the
spring discharge point and the
creek to the south into pond.

Ph 6.4
 Temp 12.6
 Cond. 557. } for SW-02
 In pond.

Photograph 14

Photo to the SW of sapling area
+ 2 Rocks + core.

Distance from SW 01 to SW 02
Approx 220 ft to the SE.

SW-02 sapling collected at 10:30

Photo 15 to the North toward Pump Station Pond

Note possible alternative source
of H₂O discharge

SD-01 collected at 1050
approx 5 ft West of the discharge
point. ~~at the discharge~~ ~ about 1 ft of H₂O depth

(11:45)
SD-02 collected at core approx 3 ft
in diameter ~ about 8 inches water
depth - soil is light brown color

SEP 02 '97 11:32 NO.003 P.0

ID:

facij west
Photo 16 - ^{photo} ~~collection~~ of
sample SD-02 location taken at
1135

12:00 N Started down
and cleanup - labeling for
new location

12:37 wrapping completed
for (Vig gas spring location

At 1250, left facility for ice,
tap water and lunch

Back at facility at 1320.

At 1400, MM at SW-04.
To collect grad water and
duplicate sample (SW-04A).

At 1405, BG + Mr Olsen at SS-05.

SS 05 complete at 1440

Photo 17 taken to the North
see tree debris in background

At 1420,

Photo 18 shot facing down of
SW-04 sample location + imp
pit (sewer system).

Sample collection at SW 04 and
SW-04A occurred at 1405 and
1420 respectively

At SS-05, Bob has connected
sampling line at 1500.

MM at SL-04 for sludge sample
from sewer system. MM will not
enter sewer but will attempt to
collect soil from sewer w/ pole +
bucket at 1510.


Photo 19 shot facing down at 1509 of
SL-04 location

Photo 20, shot facing north at 1515
of SL-04 and SS-05 location.
(MM) 6/4/97


Photo 21, shot facing down at 1516
of SS-05 location!
(MM) 6/4/97

ORIGINAL

Sample SS-05

15:00 hrs start  Small remnant structure

80ft
SW

 SL-4 ... 40ft SE ... Sample location
N

At 1510, sample began at SL-04 which is sample/sensor.

Sample complete at SL-04 at 1535.

Photo 21 - shot fairly down at boaker stick used to sample location at 1532 at SL-04

At 1540, picked up equipment and jigs for Area B - Railroad Area.

SL-03 and SW-03 in the prototype building were not located

upon observation by Mr. Olson. These areas thus were not sampled.

SS-08 location between

Root Beam 2-3 from the west

Completed by BZ 14:20 - 14:30

Photo 22 - from the south

Of sample location SS-08


Soil - 0-2" - black sands/gravels 2-6" - red clays

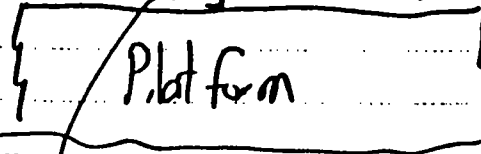
16:10 - 16:20 - SS-07

completed by mm

Soils damp to wet

Iron staining of railroad track gravel layer one foot North of sample location
Staining caused by wash off from platform roof

RAILROAD tracks
staining  - 1 foot
1ft [] 2-6 inches

 Platform

Sample SS-08

MM at SS-07 in Area D -
 Railroad Area. Soil is very
 gray. Feels sandy. Most likely
 some sand, little clay.
 Started saphy at 1610. Finished
 at 1620.

Back to van. Mr. Olson indicated
 that we will be able to get a
 sample at SL-05. SL-05 is
 manhole (3 feet deep). ATK
 did not get in manhole. Able
 to reach sample with arm.
 Started saphy at 1420 finished up
 at 1635. Located did not have
 enough sample to fill jar to top
 improvised. Soil was orange
 w/ bricks in it.

Photo # 23 Fair dam of SL-05.
 at 1636.

Photo # 24 - Fair south of SS-07.
 Note SS07 is located 18 ft from
 Northern wall and 90 ft from Western

wall.

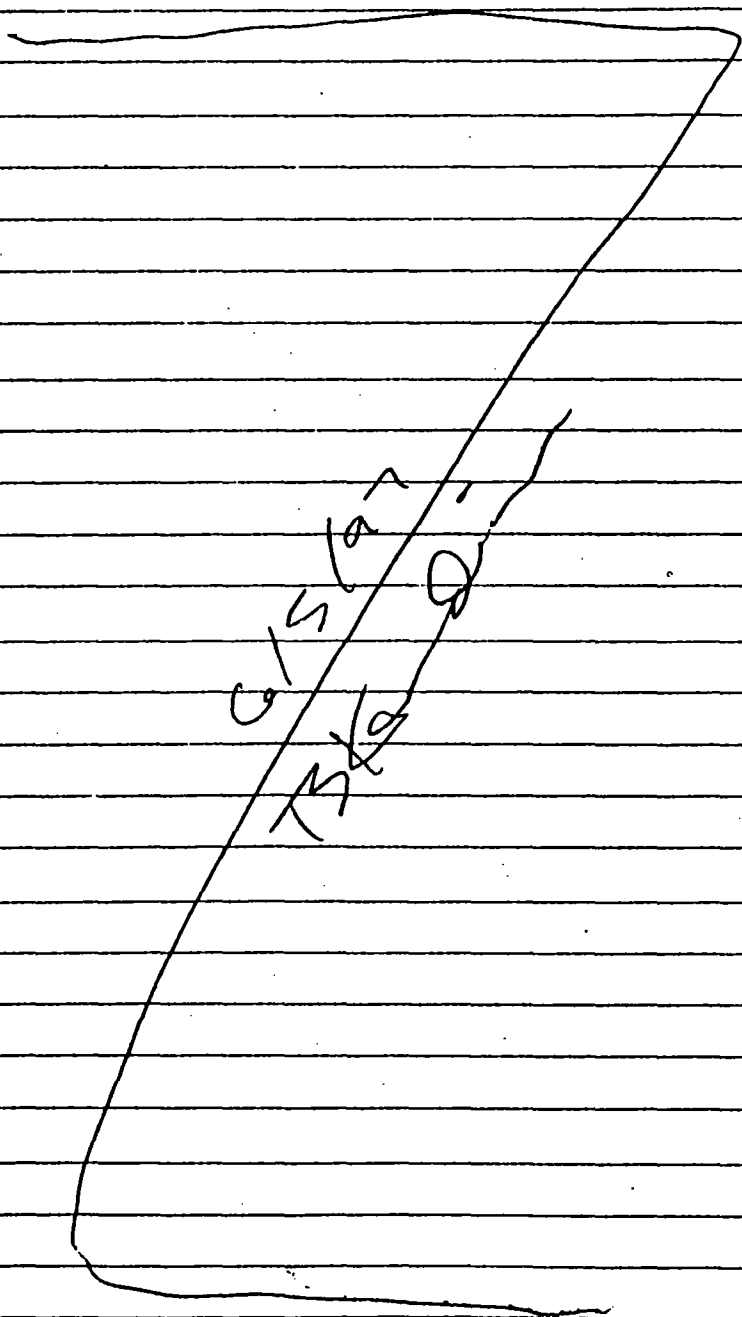
Bob took photo #25 of detailed
photo of saguaro location facing
west at 1655.

Cleaned-up. Left fairly at
1705.

June 5, 1997

- 0835 Arrive at RASD. Went to meet with Anne Olsen.
- 0848 Anne Olsen joined the ATKearney team. The ATKearney team consisted of Mr. Bob Gunderson and Mr. Don Kendrick. Weather was partly cloudy, slightly breezy and approximately 65°F. The Team proceeded to Area E - Bay Loading Area.
- 0905 Arrive at NRSD. Signed in at guard post and got water for decon purposes. Proceeded to Area E - Bay Loading Area.
- 0918 Arrive at Building 405 where antispark flooring and soil will be collected.
- 1005 Completed decon procedures. Prepared to collect Field Blank and Rinse water sample. Prior to collecting these samples, went with Mr. Olsen to survey the sumps where the team was to sample water and sludge. Mr. Olsen had indicated that the sumps had been

TKd: 6/5/97



June 5, 1997

concerned over.

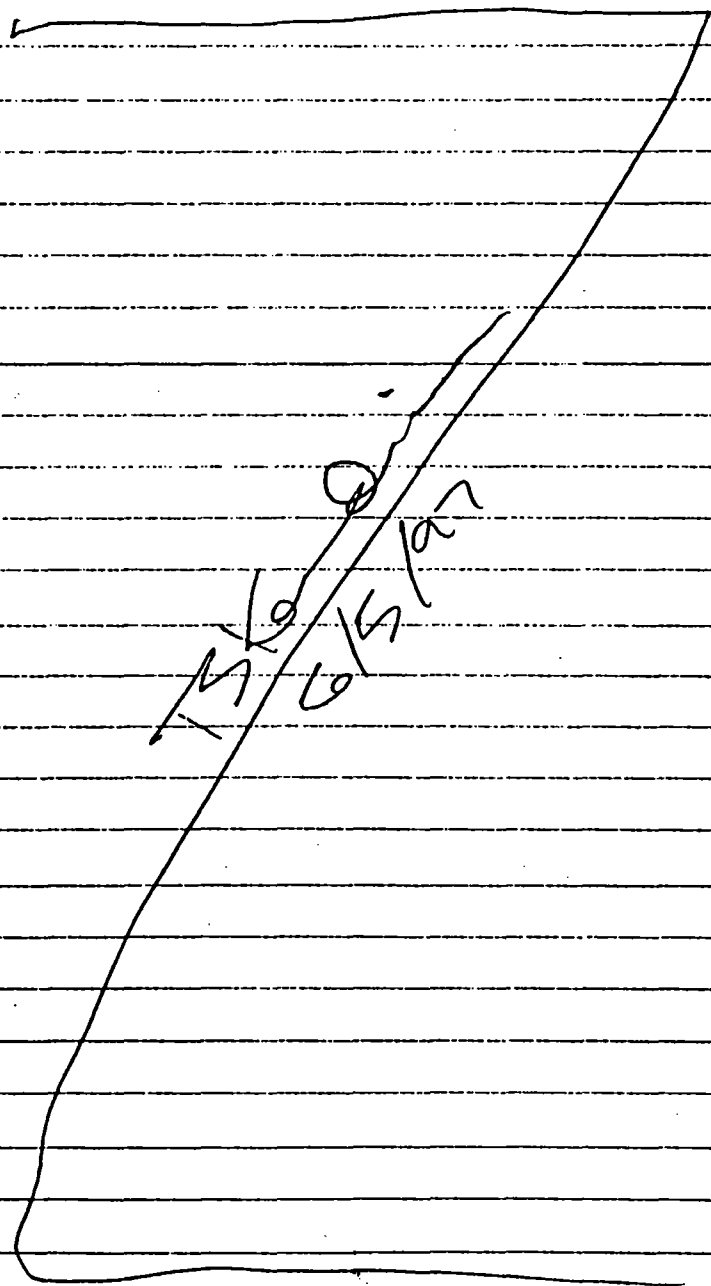
1010 Camera 2, Photo 1 of sump located at SW corner of building 405. Facing W by Bob Gurdikar. Witnessed by B. Kendrick.

1015 Camera 2, Photo 2 of sump located at south center corner of Building 405. Sump was broken open; however opening was small. Appeared to be less than 1 inch of water (liquid) and solids at the bottom. It was deemed that no sample could be collected from this location. Opening was approximately 6" x 12" and metal along edges was extremely sharp and rusted. Facing S by B Gurdikar.

1015 Camera 2, Photo 3 of inside of sump. Facing Down by B Gurdikar. Witnessed by B Kendrick.

1030 Completed surveying Building 405 and 406. Each building has 4 sumps. With the exception of the sump pictured in Camera 2,

TSK-Qi 6/5/97



June 5, 1997

Photograph 2, all of the sumps were covered over (similar to the sump in Camera 2, Photograph 1).

Therefore, it was determined that samples SL-06, SL-07, WW-01, and WW-02 would not be sampled.

1105 Collected Field Blank NR-FB-02.

There was limited DT water.

1120 Collected Sample NR-~~SS-08~~^{WS-01} at Building 405. Sample consisted

of red "non sparkling" floor material.

1140 Camera 2, Photo 4 of sample location NR-WS-01 in Building 405.

Facing S by B Gurdikian

witnessed by B Kendrick

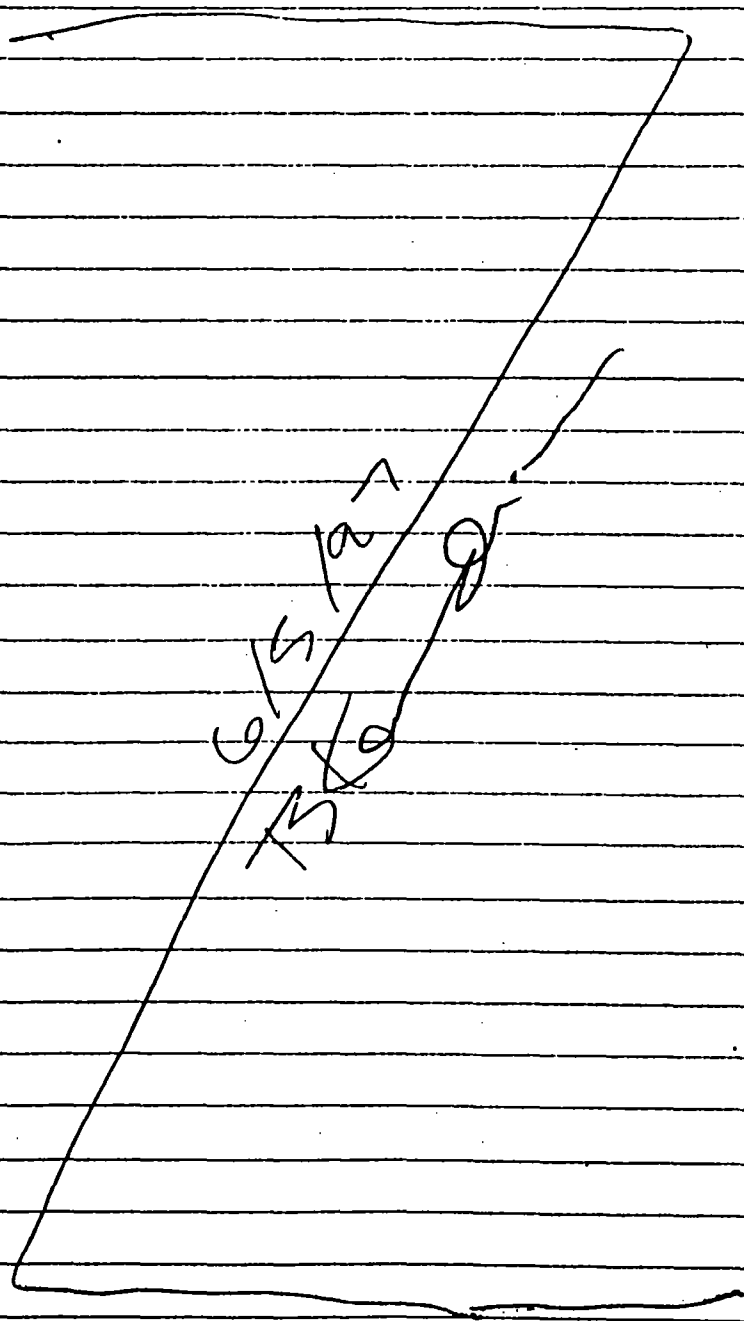
1200 Collected Sample NR-SS-09 at Building 405. Sample was rocky, reddish soil.

1215 Camera 2, Photo 5 of sample location NR-SS-09.

1220 Departed Area E. Proceeded to Area F - Building 1711.

1235 Arrive at Area F.

TSG Di 6/5/97



June 6, 1997

1310 Completed sampling at location
NR-SS-10.

1311 Camera 2 photo 8 of sample
location NR-SS-10 at bottom
of Sink Hole Facing E by B. Kendrick
witnessed by B. Gurdikian.

Amendment to log book for documenting
photographs

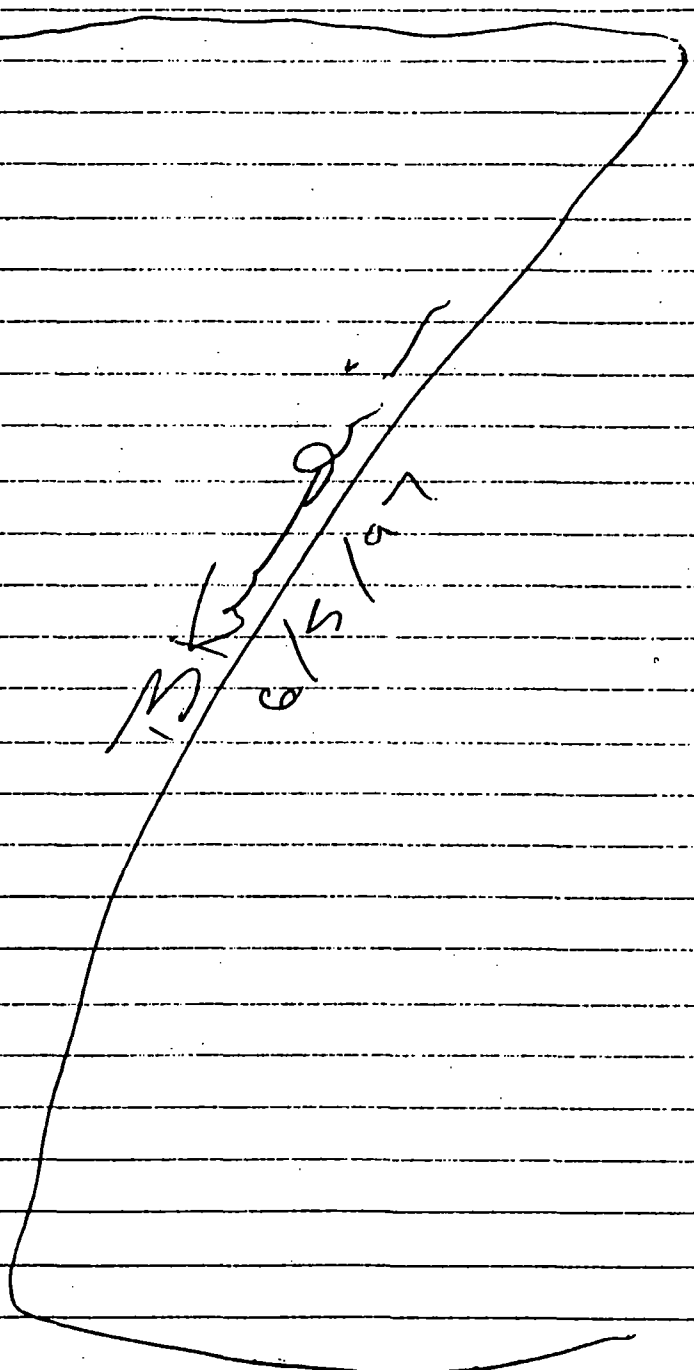
- Camera 2, photo 6 general
view of north wall of sink hole
Facing S by B. Gurdikian,
witnessed by B. Kendrick.
- Camera 2, photo 7 of yellowish
clay outcrop along wall of sink
hole. Facing W by
B. Gurdikian, witnessed by
B. Kendrick.

1325 Depart NRSD. En route
to main plant area at RAAD.

1345 Arrive back at main plant area
at RAAD. Picked up more DE
water and gloves.

1420 Collected Equipment Rinse
NR-EB-02.

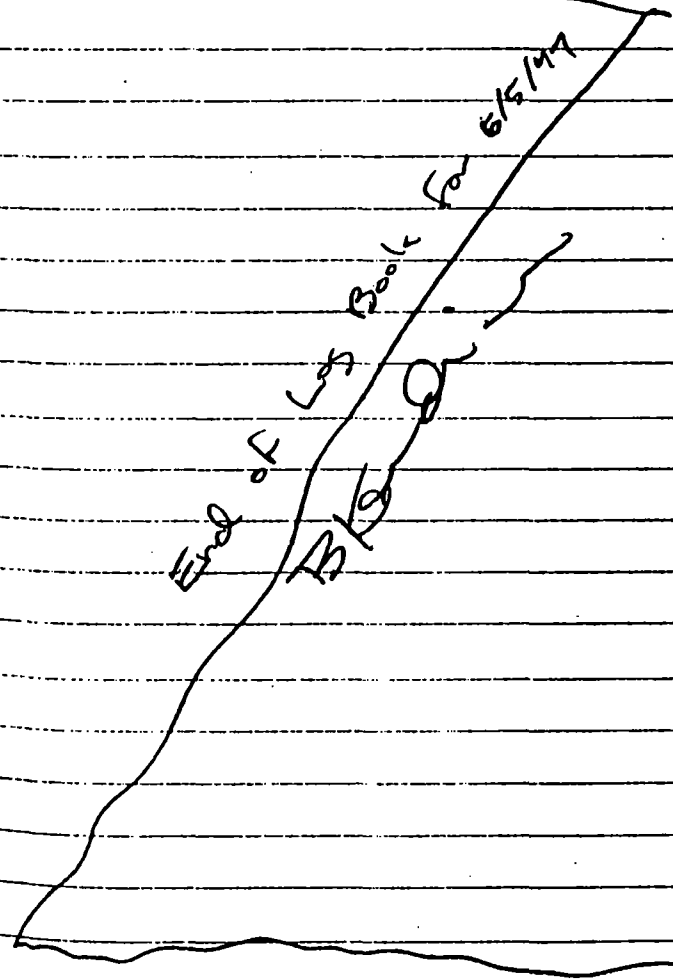
B. Kendrick 6/5/97



6/5/97

June 5, 1997

1440 Depart RADD All used
PPE was deposited in the
facility's solid waste dumpsters
before departing.



End of Log Book for 6/5/97

Stan Lim 6/5/97

6/6/97

Warehouse - Tedlow

Opened large cooler - discovered
sample NR SW. 04 TAL Metals opened
with water dispersed onto bottom of cooler.
Emptied cooler, and drained contents
back into ~~cool~~ Jar.

Marked top of Jar with X
with note and date/time of
6/6/97 1525 hrs

6/7/97

Bob Gunkel doing paperwork
coc / Lobby ac / Tagging.

Note: there are two SS-05

Sample #5, of ~~for~~ P

① SS-05 Area C Bmy. Ground - Debris Pile
surface soil

② SS-05 Area C Prototype Bld. Surface Soil

I will give 1st one SS-05a
and second one SS-05a for clarification

[illegible]

New River Storage Depot (Radford Army Ammunition Plant). At 0825, arrived at main gate and parked in visitor spot. Signed in and got visitor packages + badges. A camera pass was given to ATK and Techlar.

- Met Arney Olson.
- Today's weather is drizzling, cloudy and damp. Temperature 62°F. There is little to no wind with no definite wind direction.

At 0945, ATK and Mr. Olam picked up a pH and conductivity meter at the facility for surface water and other liquid samples.

At 1000, arrived a main gate of
New River Storage Dept and then
went to Area A (the Burning Ground).
MAR 6/3/97

ORIGINAL

Completed at ~~2000~~ ²⁰⁰⁰ PM 6/6/97.

Iced coolers - Satday 6/6/97
at ~~2030hrs~~ 2030hrs

Iced coolers on Monday at ~~0700~~ 0700.
Condition of coolers Monday morning
were good and not moved.

Left Warehouse at 11:30 ~~AM~~
Arrived at Annapolis Laboratory at
13:30 - Left Lab at ~~21~~ 1400hrs

Talked with Arnold at the EPA
lab on 6/9/97 at ~~2400~~ ²⁴⁰⁰ PM. Told him
about the following issues.

1) DO AC on NR-SS-11

2) If possible split sample
NR-WS-02, or NR-WS-01 to
perform ms/msd for aqueous
samples.

3) Told him about 5 day holding
time of ~~80~~ ⁸⁰ BNA/Pesticides/PCB
and indicated which cooler the
samples were located in.

4) Told him about the open contained
of SW-04 - and the X on top
of the cooler and the tag marking
indicating history of sample
and condition of collection.

ATTACHMENT B
CHAIN-OF-CUSTODY FORMS

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME				NO. OF CON- TAINERS	REMARKS									
SAMPLERS: (Signature)							TAG #'S									
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION											
09-0684	Rodford Army Ammunition Plant / New River															
Neil Muller																
SD-01	6/4/97	1050		X	NR-SD-01	6	X	X	X	X					2197424 - 7427	
SD-02	6/4/97	1115		X	NR-SD-02	6	X	X	X	X					2197428 - 7431	
WS-01	6/5/97	1120		X	NR-WS-01	6	X	X	X	X					2197432 - 7435	
WS-02	6/3/97	1840		X	NR-WS-02	6	X	X	X	X					2197354, 7356, 7358, 7359	
SL-04	6/4/97	1510		X	NR-SL-04	6	X	X	X	X					2197436 - 7439	
SL-05	6/4/97	1620		X	NR-SL-05	6	X	X	X	X					2197440 - 7443	
RB-01	6/3/97	1820		X	NR-RB-01	6	X	X	X	X					2197364, 2197363, 2197372, 2197371 (PINSATE BLANK)	
FB-01	6/3/97	1840		X	NR-FB-01	6	X	X	X	X					2197365, 7366, 7370, 7369 (FIELD BLANK)	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		ORIGINAL				
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)						
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature)		Date / Time		Remarks								

ENVIRONMENTAL PROTECTION AGENCY - CRL

~~Office of Enforcement~~ 839 Bentgate Road

Annexes 2140

CHAIN OF CUSTODY RECORD

REGION 3

841 Chestnut St.

Philadelphia, Pennsylvania 19107

[illegible]

CHAIN OF CUSTODY RECORD

REGION 3

841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.		PROJECT NAME				NO. OF CON- TAINERS	REMARKS					
09-068Y		Rodford Army Ammunition Plant / New River										
SAMPLERS: (Signature)						Tag #'s						
J. Ke McGeehan / B. Kendrick / Robert Gaudikian												
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION							
RB-02	6/5/97	1415		X	NR-BB-02	2			X	X		2197572, 7573 (Rinsate)
SW-04	6/4/97	1435		X	NR-SW-04A	2			X	X		7574, 7575
SS-05	6/4/97	1225		X	NR-SS-05	2	X	X				7576, 7577
SS-06	6/4/97	1255		X	NR-SS-06	2	X	X				7578, 7579
SS-07	6/4/97	1610		X	NR-SS-07	2	X	X				7580, 7581
SS-08	6/4/97	1610		X	NR-SS-08	2	X	X				7582, 7583
SS-09	6/5/97	1120		X	NR-SS-09	2	X	X				7584, 7585
SS-10	6/5/97	1310		X	NR-SS-10	2	X	X				7586, 7587
SD-01	6/4/97	1050		X	NR-SD-01	2	X	X				7588, 7589
SD-02	6/4/97	1115		X	NR-SD-02	2	X	X				7590, 7591
WS-01	6/5/97	1120		X	NR-WS-01	2	X	X				7592, 7593
SL-04	6/4/97	1510		X	NR-SL-04	2	X	X				7594, 7595
SL-05	6/4/97	1620		X	NR-SL-05	2	X	X				7596, 7597
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		ORIGINAL
<i>(Signature)</i>		6/4/97 1415										
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature)		Date / Time		Remarks				
								Delivered by Robert Gaudikian 6/9/97				

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

Office of Enforcement 839 Bestgate Road
Annapolis, MD 21401

CHAIN OF CUSTODY RECORD

REGION 3

841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.		PROJECT NAME				NO. OF CON- TAINERS	REMARKS									
07-068Y		RADFORD ARMY AMMUNITION PLANT / NEW RIVER														
SAMPLERS: (Signature)																
Will Michel / [Signature]																
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	Tag Numbers										
SS-03	6/3/97	1540		X	NR-SS-03	2	X	X							2196304, 6306	
SS-05	6/3/97	1740		X	NR-SS-05	2	X	X							6314, 6312	
WS-02	6/3/97	1840		X	NR-WS-02	2	X	X							7355, 7360	
SS-11	6/3/97	1305		X	NR-SS-11	2	X	X							6348, 6345	
SS-11	6/3/97	1370		X	NR-SS-11	2	X	X							6346, 6344 (DO QC)	
SS-02	6/3/97	1125		X	NR-SS-02	2	X	X							6327, 6328	
SS-04	6/3/97	1710		X	NR-SS-04	2	X	X							6341, 6340	
SS-04A	6/3/97	1710		X	NR-SS-04A	2	X	X							6321, 6322	
SS-01	6/3/97	1100		X	NR-SS-01	2	X	X							6333, 6334	
FB-01	6/3/97	1840		X	NR-FB-01	2	X	X							7367, 7368 (Field Blank)	
RB-01	6/3/97	1820		X	NR-RB-01	2	X	X							7362, 7361 (Kinetic Blank)	
FB-02	6/5/97	1105		X	NR-FB-02	2	X	X	X	X					7558, 7559 (Field Blank)	
WS-01	6/5/97	11:20		X	NR-WS-01	2	X	X	X	X					7566, 7567	
SW-04	6/4/97	1420		X	NR-SW-04	2	X	X	X	X					7568, 7569 (Field Blank)	
SW-02	6/4/97	1040		X	NR-SW-02	2	X	X	X	X					7570, 7571	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)	ORIGINAL
[Signature]	6/7/97					
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)	
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks		
				Fed Ex AirBill # <u>NONE</u>		
				MS/MSD → TAGS 6346, 6344		

SOUTHWEST LANE OF OKLAHOMA
1706 West Albany, Suite C
Broken Arrow, OK 74012

REGION 3

841 Chestnut St.

Philadelphia, Pennsylvania 19107

CHAIN OF CUSTODY RECORD

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3 19005

Office of Enforcement 839 Best Gate Road
Annapolis MD 21401

CHAIN OF CUSTODY RECORD

REGION 3

841 Chestnut St.
Philadelphia, Pennsylvania 19107

PROJ. NO.		PROJECT NAME				NO. OF CON- TAINERS	REMARKS										
SAMPLERS: (Signature)																	
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION		Tag # 5										
09-0684	6/4/97	1225		X	NR-SS-05A	6	X	X	X	X						2197445 - 7447	
SS-06	6/4/97	1255		X	NR-SS-06	6	X	X	X	X						2197448-7450, 2197601	
SS-07	6/4/97	1610		X	NR-SS-07	6	X	X	X	X						2197602 - 7605	
SS-08	6/4/97	1610		X	NR-SS-08	6	X	X	X	X						2197606 - 7609	
SS-09	6/4/97	1120		X	NR-SS-09	6	X	X	X	X						2197610 - 7613	
SS-10	6/5/97	1310		X	NR-SS-10	6	X	X	X	X						2197614 - 7617	
SS-11	6/3/97	1315		X	NR-SS-11												
SS-11	6/3/97	1310		X	NR-SS-11	6	X	X	X	X						2196343, 6349, 67353, 7351	
SS-11	6/3/97	1315		X	NR-SS-11	6	X	X	X	X						2196342, 67352, 6348, 6350 DOQC	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
[Signature]		6/4/97 9:00A		[Signature]		[Signature]				[Signature]		[Signature]				[Signature]	
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)	
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature)		Date / Time		Remarks									
								Delivered by Robert Gindickon 6/9/97									
								MS/MSD - 3 Fog #									

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ENVIRONMENTAL PROTECTION AGENCY - CRL

Office of Enforcement 839 Beate Road
Annapolis MD 21401

CHAIN OF CUSTODY RECORD

REGION 3

841 Chestnut St.

Philadelphia, Pennsylvania 19107

PROJ. NO.		PROJECT NAME					NO. OF CON- TAINERS	REMARKS									
09-0684		Radford Army Ammunition Plant/New River															
SAMPLERS: (Signature)																	
Mike McLean / R. Allen / B. Fordick																	
STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION		Tag #										
SS-05A	6/4/97	1225		X	NR-SS-05A		6	X	X	X	X					2197445 - 7447	
SS-06	6/4/97	1255		X	NR-SS-06		6	X	X	X	X					2197448 - 7450, 2197601	
SS-07	6/4/97	1610		X	NR-SS-07		6	X	X	X	X					2197602 - 7605	
SS-08	6/4/97	1610		X	NR-SS-08		6	X	X	X	X					2197606 - 7609	
SS-09	6/4/97	1120		X	NR-SS-09		6	X	X	X	X					2197610 - 7613	
SS-10	6/5/97	1310		X	NR-SS-10		6	X	X	X	X					2197614 - 7617	
SS-11	6/3/97	1315		RAG													
SS-11	6/3/97	1310		X	NR-SS-11		6	X	X	X	X					2196343, 6349, 7353, 7351	
SS-11	6/3/97	1315		X	NR-SS-11		6	X	X	X	X					2196342, 7352, 7348, 6350 DOQC	
Relinquished by: (Signature)			Date / Time		Received by: (Signature)			Relinquished by: (Signature)			Date / Time		Received by: (Signature)				
[Signature]			6/4/97 9:00		[Signature]												
Relinquished by: (Signature)			Date / Time		Received by: (Signature)			Relinquished by: (Signature)			Date / Time		Received by: (Signature)				
Relinquished by: (Signature)			Date / Time		Received for Laboratory by: (Signature)			Date / Time		Remarks							
										Delivered by Robert G. Smith 6/9/97							
										MS/MISD - 10/1/97							

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

Page 1 of 1

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ATTACHMENT C

SUMMARY OF SAMPLE LOCATIONS

**SUMMARY OF SAMPLING LOCATIONS
NEW RIVER STORAGE DEPOT
JUNE 3-5, 1997**

Sample Number	Area	Description
SS-01	Area A - Burning Ground	Shallow surface soil
SS-02	Area A - Burning Ground	Shallow surface soil
SS-03	Area B - Igniter Area	Shallow surface soil
SS-11	Area B - Igniter Area	Shallow surface soil
SL-01	Area B - Igniter Area	Manhole sludge
SL-02	Area B - Igniter Area	Manhole sludge
SS-04	Area C - Burning Ground	Burn Area - surface soil
SS-04A	Area C - Burning Ground	Burn Area - surface soil
SS-05	Area C - Burning Ground	Burn Area - surface soil
WS-02	Area C - Burning Ground	Cage - solid waste
SW-01	Area C - Wiggins Spring	Spring - aqueous
SD-01	Area C - Wiggins Spring	Spring - sediment
SW-02	Area C - Wiggins Spring	Spring - aqueous
SD-02	Area C - Wiggins Spring	Spring - sediment
SS-05	Area C - Prototype Building Area	Buildings - surface soil
SS-06	Area C - Prototype Building Area	Buildings - surface soil
SL-04	Area C - Prototype Building Area	Buildings - sludge
SW-04	Area C - Prototype Building Area	Buildings - aqueous
SW-04A	Area C - Prototype Building Area	Buildings - aqueous
SS-07	Area D - Rail Yard	Surface soil
SS-08	Area D - Rail Yard	Surface soil
SL-05	Area D - Rail Yard	Sludge
SS-09	Area E - Bag Loading Area	Red soil
SS-10	Area F - Igloo 1711	Sink hole - surface soil
RB-01	Area B - Igniter Area	Rinsate blank - sampling equipment
RB-02	Area E - Bag Loading Area	Rinsate blank - sampling equipment
FB-01	Area B - Igniter Area	Field blank
FB-02	Area F - Igloo 1711	Field blank

ORIGINAL
ORIGINAL

ATTACHMENT D
SAMPLE LOCATION MAPS

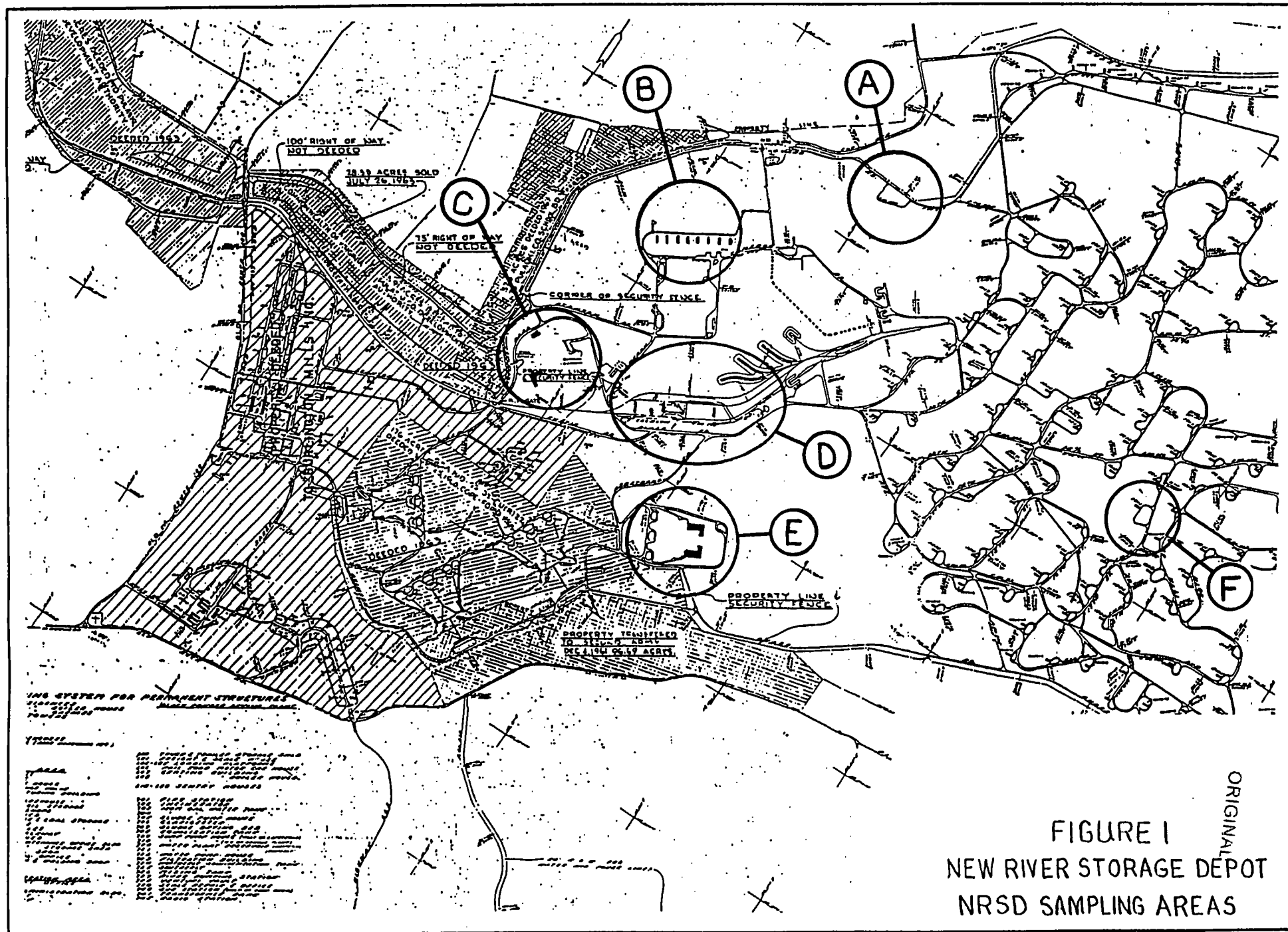


FIGURE 1
NEW RIVER STORAGE DEPOT
NRSD SAMPLING AREAS

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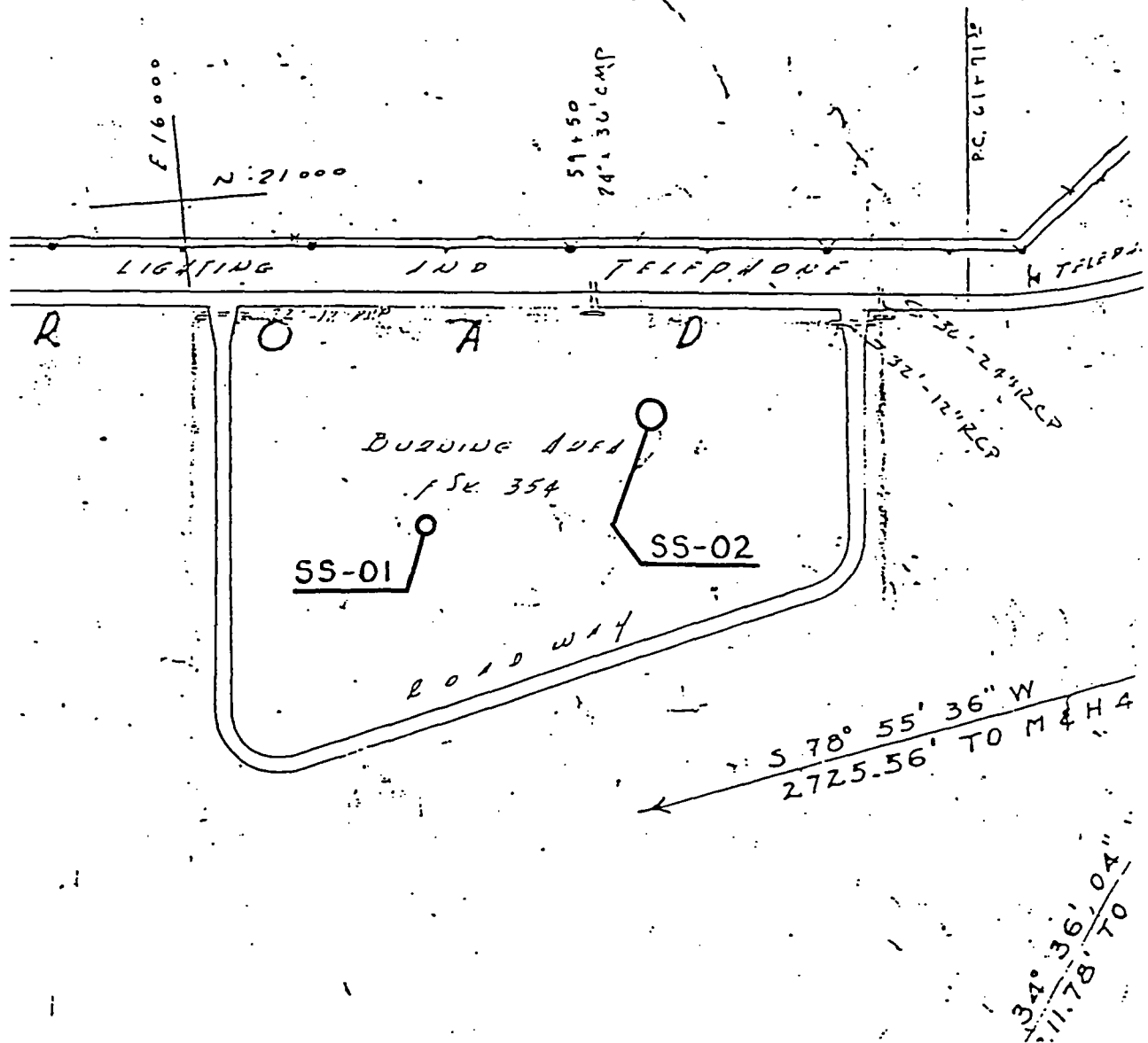
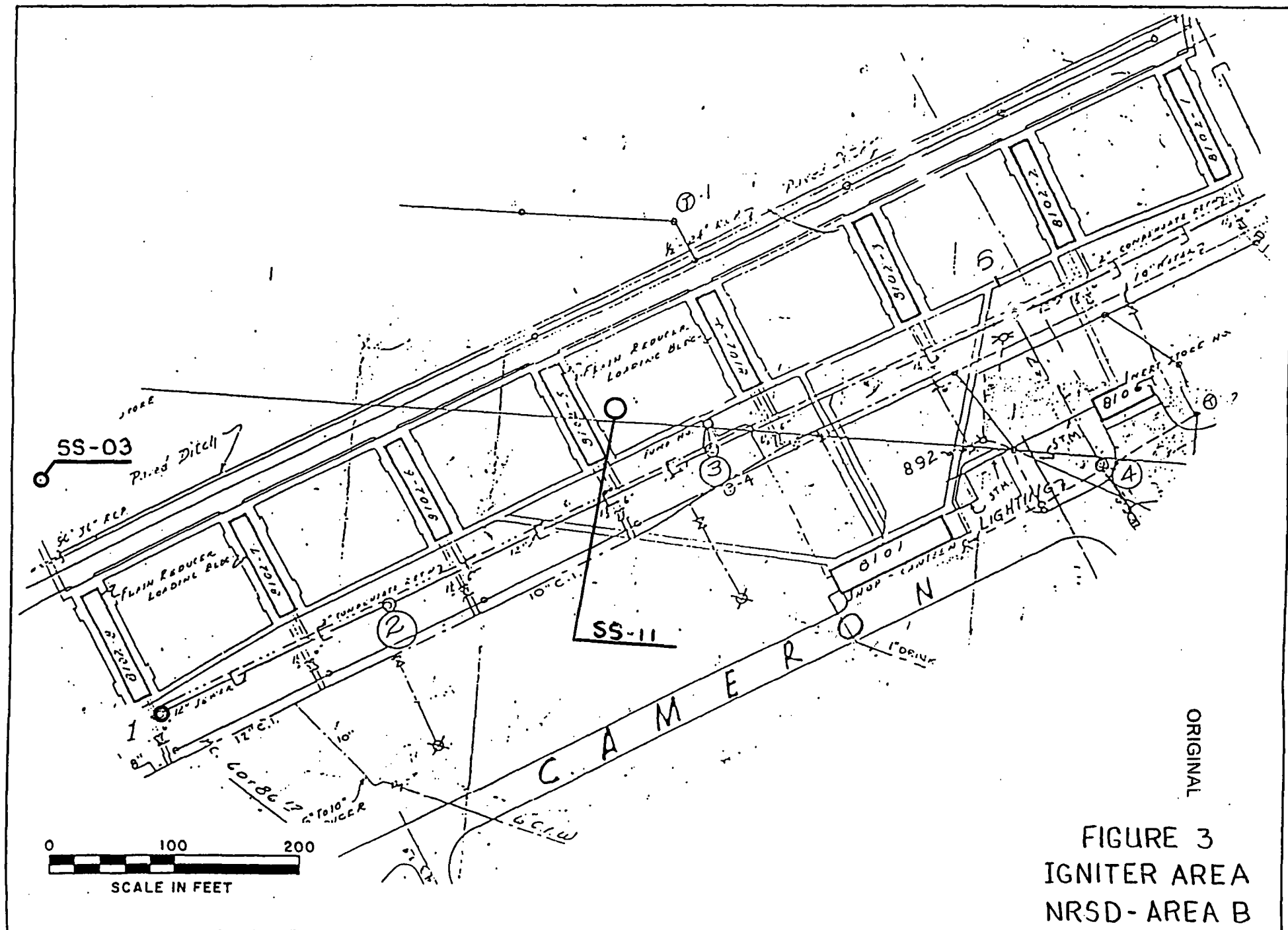


FIGURE 2
NORTH BURNING GROUND
NRSD-AREA A



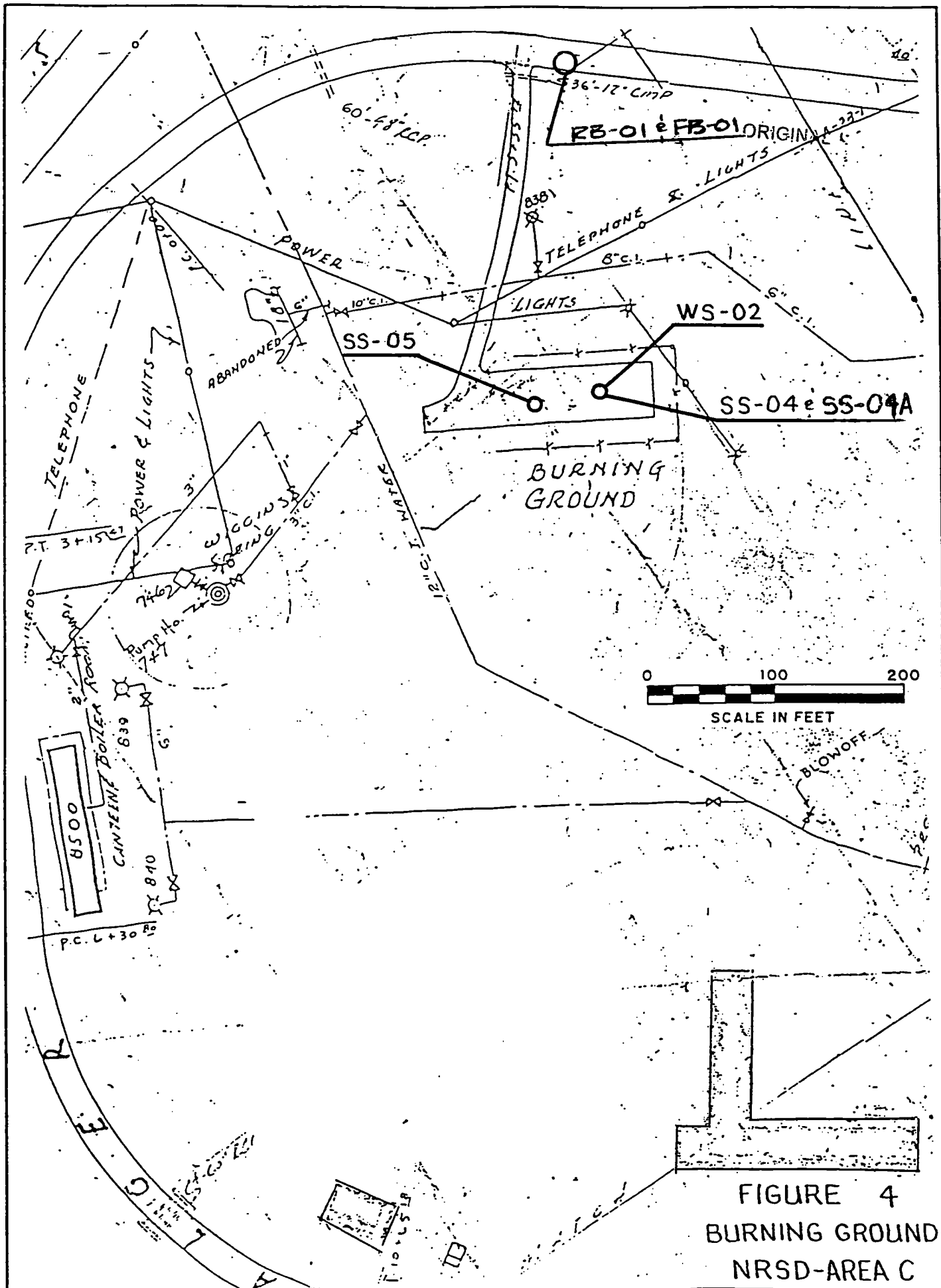
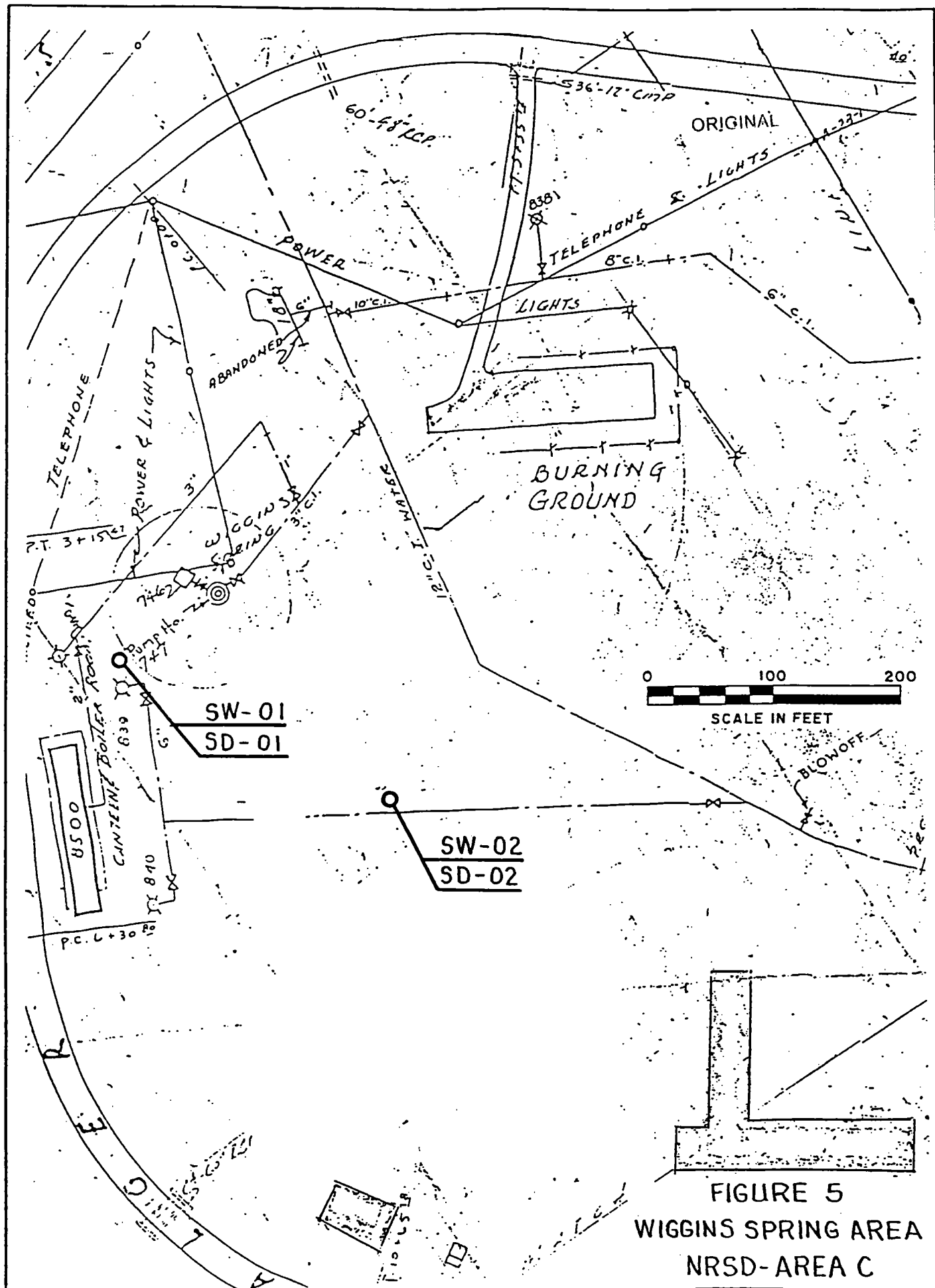
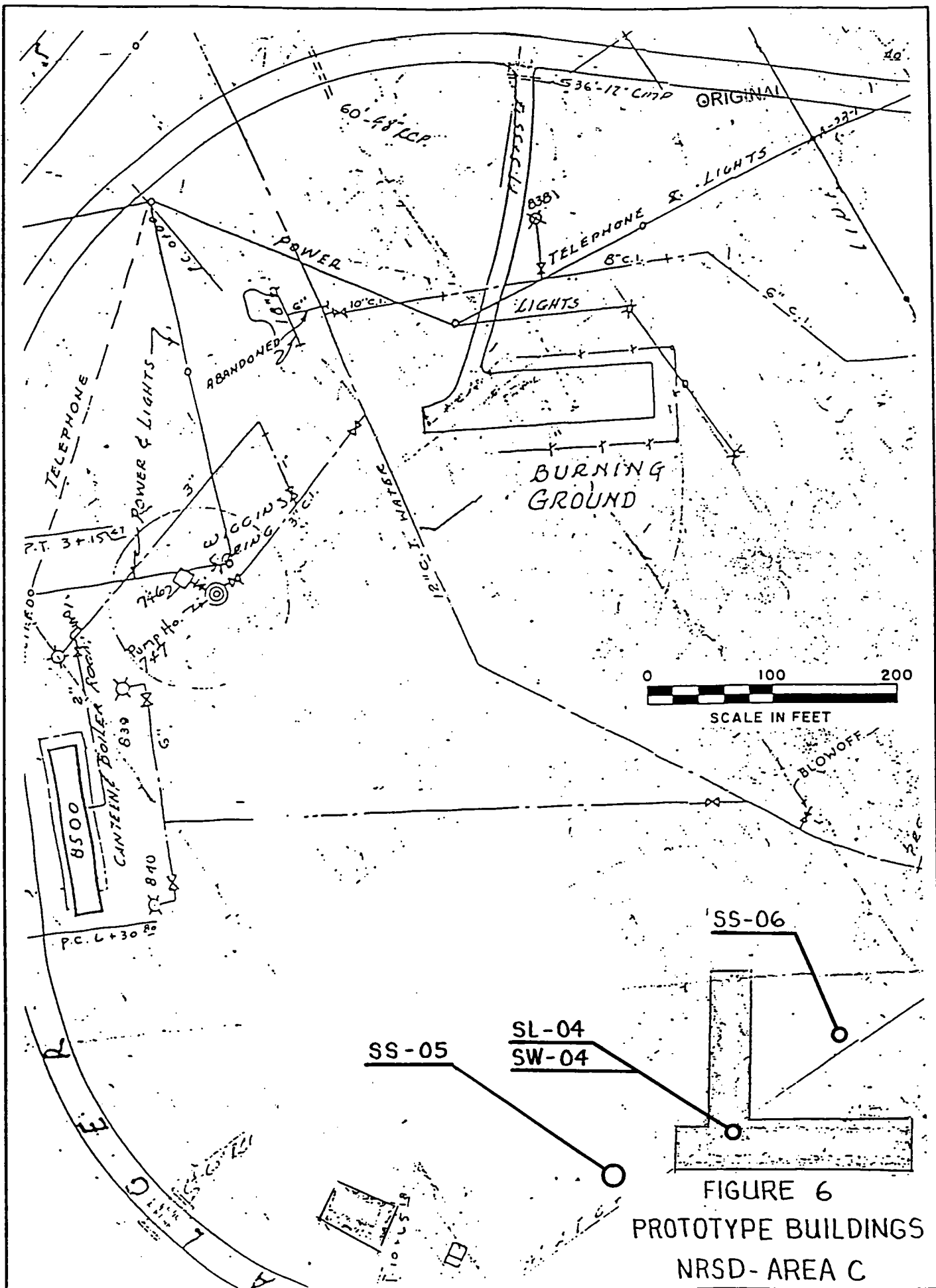
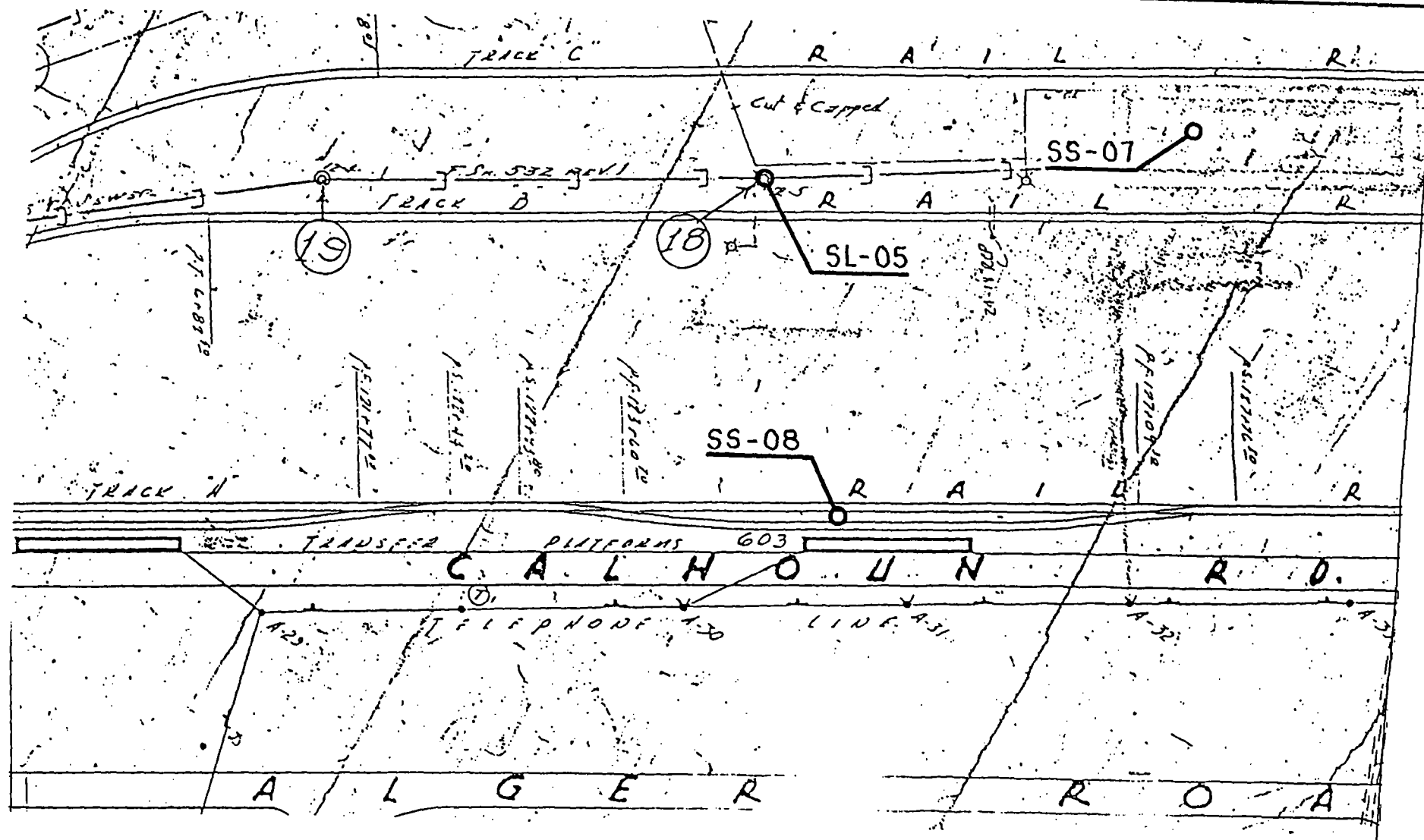


FIGURE 4
BURNING GROUND
NRSD-AREA C







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FIGURE 7
RAIL YARD
NRSD AREA D

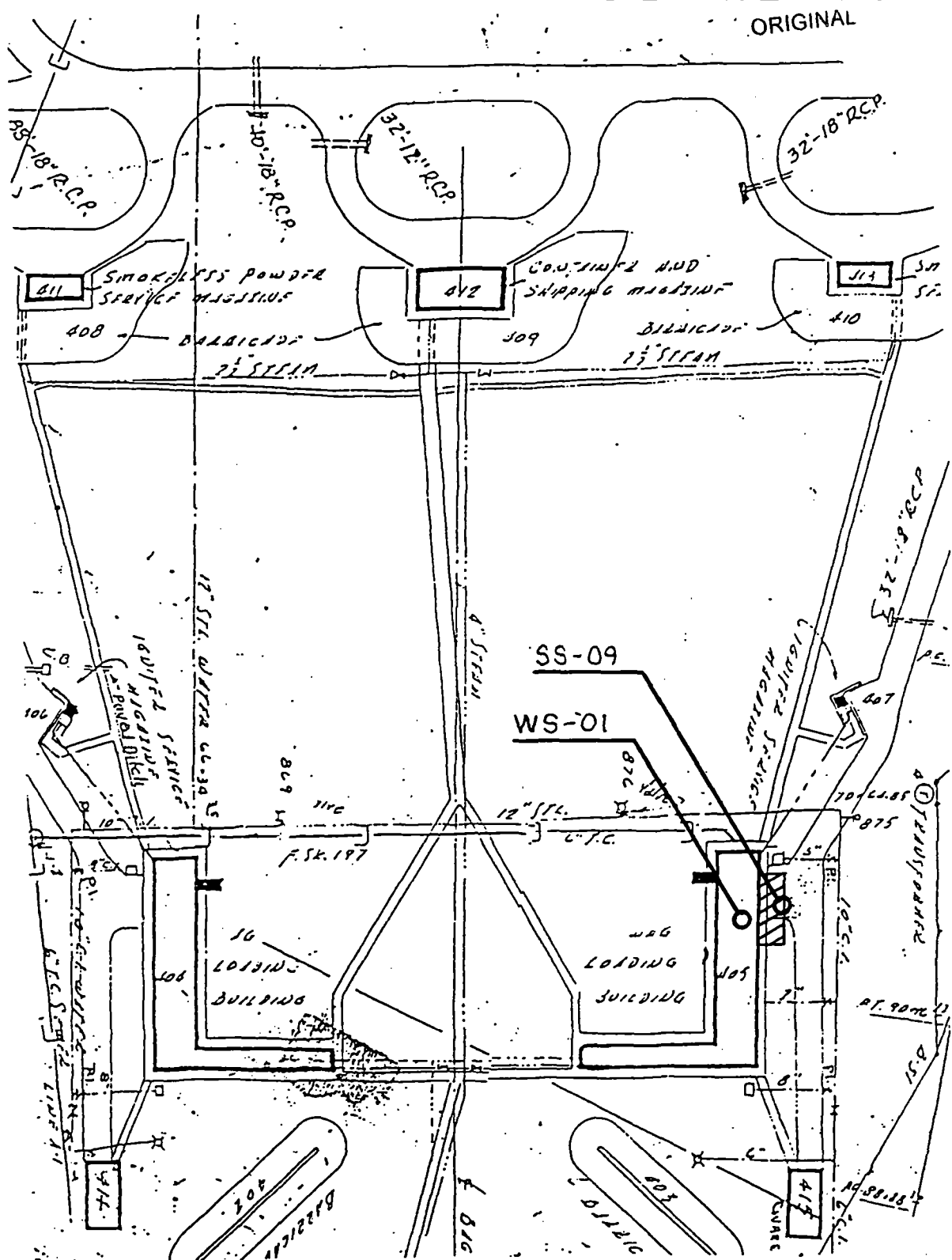


FIGURE 8
BAG LOADING AREA
NRSD-AREA E

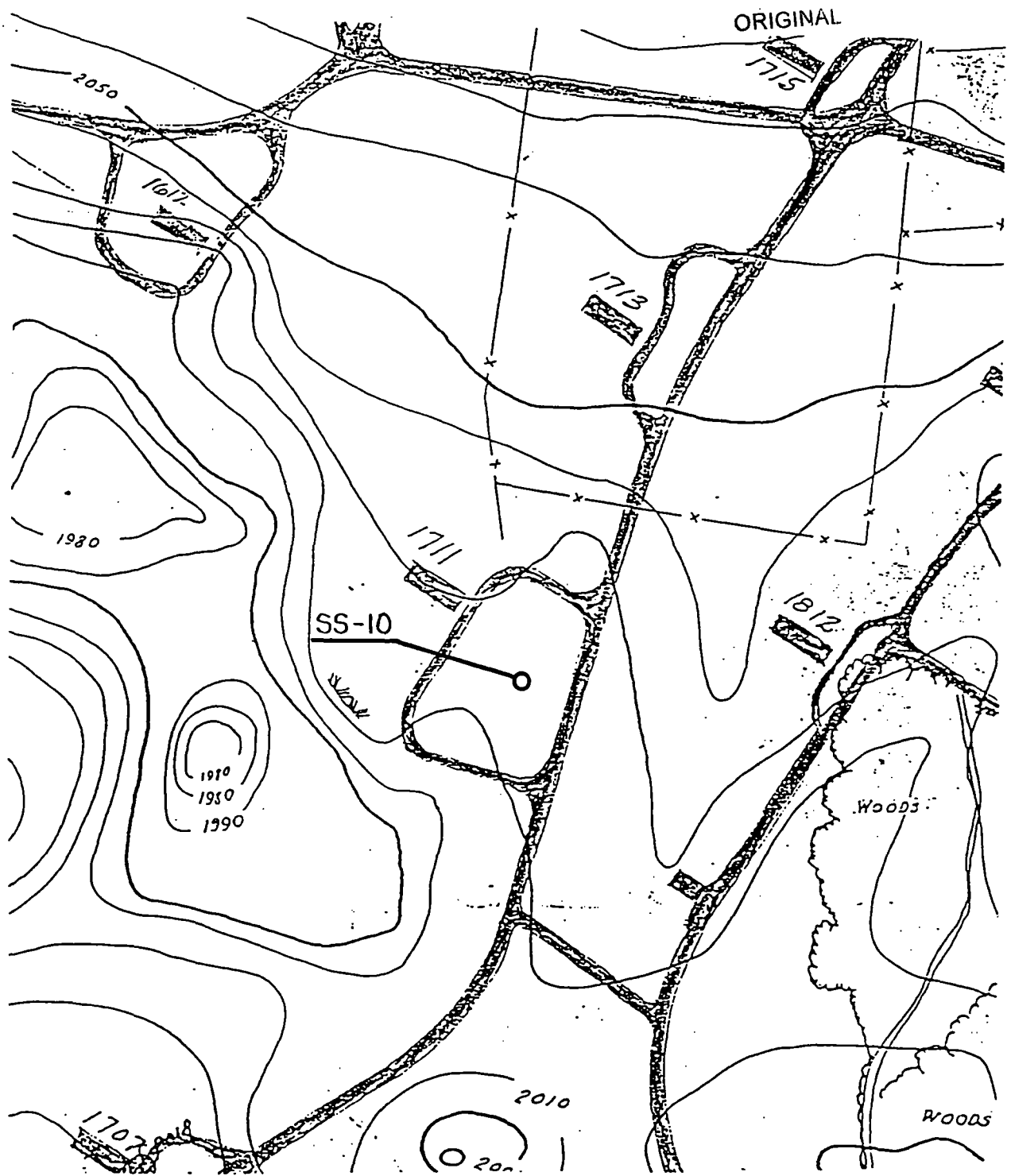


FIGURE 9
IGLOO NO. 1711 - SINK HOLE
NRSD - AREA F

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ATTACHMENT E
PHOTOGRAPHIC LOG

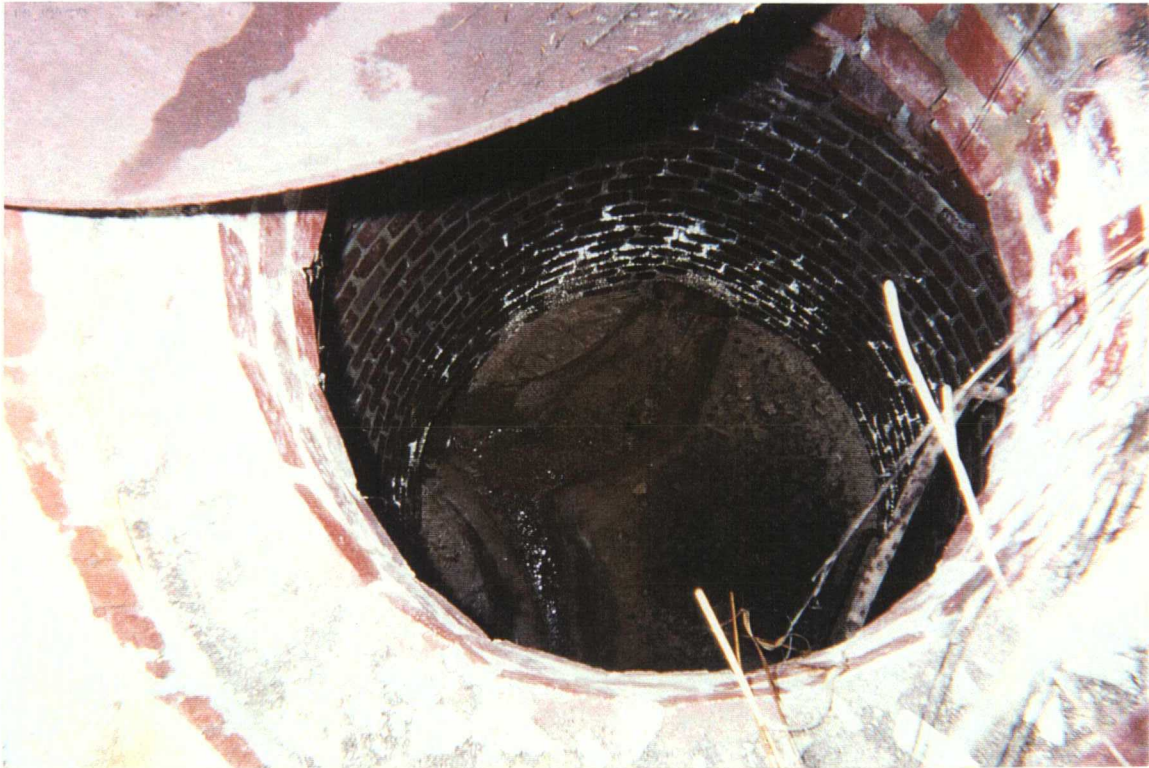
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NRSD Photograph 1-1: Area A - North Burning Ground
View of sample NR-SS-01 sampling location



NRSD Photograph 1-2: Area A - North Burning Ground
View of sample NR-SS-02 sampling location



NRSD Photograph 1-3: Area B - Igniter Area
View of proposed sample location NR-SL-01
No sample was collected due its confined space nature



NRSD Photograph 1-4: Area B - Igniter Area
View of proposed sample location NR-SL-01



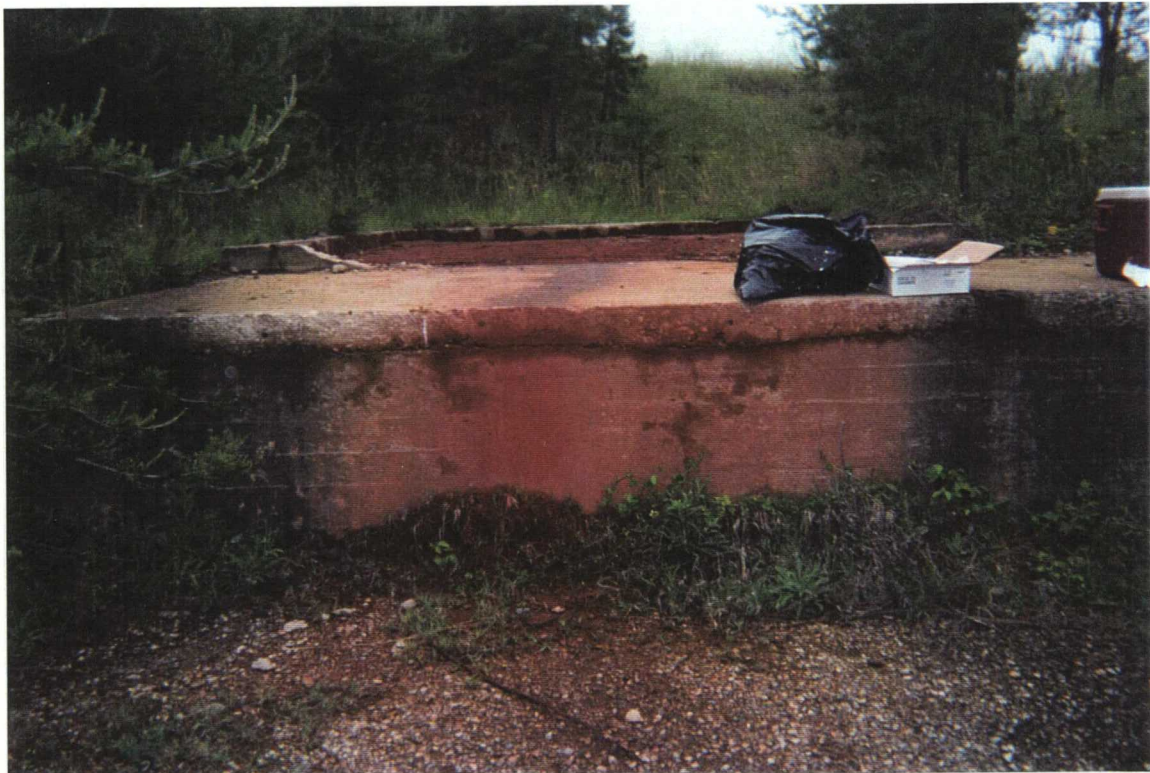
NRSD Photograph 1-5: Area B - Igniter Area
View of sample location NR-SS-11



NRSD Photograph 1-6: Area B - Igniter Area
Close-up view of sample location NR-SS-11



NRSD Photograph 1-7: Area B - Igniter Area
View of marking on building wall adjacent to sample location NR-SS-11



NRSD Photograph 1-8: Area B - Igniter Area
View of sample location NR-SS-03



NRSD Photograph 1-9: Area C - Burning Ground
View of burning cage and sampling location NR-SS-04



NRSD Photograph 1-10: Area C - Burning Ground
Close-up view of sampling location NR-SS-04



NRSD Photograph 1-11: Area C - Burning Ground
View of sampling location NR-SS-05



NRSD Photograph 1-12: Area C - Wiggins Spring
View of spring outlet and sampling location NR-SW-01
as taken from former boiler pad

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NRSD Photograph 1-13: Area C - Wiggins Spring
View of spring outlet and stream leading to the small lake
as taken from former boiler pad



NRSD Photograph 1-14: Area C - Wiggins Spring
View of sampling location NR-SW-02



NRSD Photograph 1-15: Area C - Wiggins Spring
View of sampling location NR-SW-01 and former boiler pad



NRSD Photograph 1-16: Area C - Wiggins Spring
Close-up view of sampling location NR-SW-02



NRSD Photograph 1-17: Area C - Prototype Building
View of sampling location NR-SS-05



NRSD Photograph 1-18: Area C - Prototype Building
View of sampling location NR-SW-04 and NR-SW-04A



NRSD Photograph 1-19: Area C - Prototype Building
View of NR-SW-04 sample collection



NRSD Photograph 1-20: Area C - Prototype Building
Close-up view of sampling location NR-SS-06



NRSD Photograph 1-21: Area C - Prototype Building
View of NR-SS-06 sample collection



NRSD Photograph 1-22: Area D - Rail Yard
View of rail yard loading dock and sample location NR-SS-08

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NRSD Photograph 1-23: Area D - Rail Yard
View of sample location NR-SL-05



NRSD Photograph 1-24: Area D - Rail Yard
View of sample location NR-SS-07

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NRSD Photograph 1-25: Area D - Rail Yard
View of sample location NR-SS-08



NRSD Photograph 2-1: Area E - Bag Loading Area
View of sump located at southwest corner of Building 405



NRSD Photograph 2-2: Area E - Bag Loading Area
View of sump located at south corner of Building 405



NRSD Photograph 2-3: Area E - Bag Loading Area
View inside of sump located at south corner of Building 405



NRSD Photograph 2-4: Area E - Bag Loading Area
View of sample location NR-WS-01 located inside of Building 405



NRSD Photograph 2-5: Area E - Bag Loading Area
View of sample location NR-SS-09 located outside of Building 405

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NRSD Photograph 2-6: Area F - Igloo 1711
View of sink hole area



NRSD Photograph 2-7: Area F - Igloo 1711
View of outcropping in sink hole area

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NRSD Photograph 2-8: Area F - Igloo 1711
View of sample location NR-SS-10 located at the base of the sink hole area